

Remarks

The non-final Office Action dated March 2, 2009, lists the following new grounds of rejection: claims 1-7, 9-18 and 20 stand rejected under 35 U.S.C. § 103(a) over An (U.S. Patent No. 6,245,618) in view of Yu (U.S. Patent No. 6,521,502); claims 8 and 19 stand rejected under 35 U.S.C. § 103(a) over the '618 reference in view of the '502 reference and further in view of Lai (U.S. Patent Pub. 2002/0102801). Applicant traverses all rejections (express or implied), and further does not acquiesce to any rejection or averment in this Office Action unless Applicant expressly indicates otherwise.

Applicant respectfully traverses the § 103 rejections of claims 1-20 because the cited combination of references does not disclose the claim limitations as asserted in the Office Action. Applicant agrees with the Office Action's assertion that the '618 reference does not disclose limitations directed to an amorphizing implantation carried out prior to performing two implantations of dopants of opposite conductivity types, because the '618 reference requires a post-implantation amorphization and relies upon this post-implant amorphization to effect its purpose. However, neither the cited portions of the '618 reference (e.g., amorphous region 120) nor the cited portions of the '502 reference (e.g., amorphous regions 25) discloses forming an amorphizing region as claimed, where a pn-junction is formed in the amorphizing region. For example, referring to Figures 2, 3 and 6 of the instant application, implants I₁ (FIG. 3) and I₂ (FIG. 6) are made into the region amorphized via implant I₀ (FIG. 2), as is consistent with the claims and various example embodiments. The following discussion particularly addresses the lack of correspondence between the '618 and '502 references and the claimed invention.

Applicant submits that the Office Action's continued reliance upon buried amorphous region 120 of the '618 reference is improper because region 120 is clearly distanced from the source/drain extensions 60 and the asserted pn-junction formed by the extensions 60 and region 130, and is expressly taught by the '618 reference to be located below the channel region. *See, e.g.*, Figure 13. This is consistent with the purpose of the '618 reference as recited in its Abstract and in other discussions, which is to form a "buried amorphous region, formed below the channel region" for purposes including

suppressing “diffusion of displaced atoms and holes from the source/drain regions.” *See, e.g.*, Col. 4:52-56. Accordingly, neither the asserted pn-junction in the ‘618 reference (*i.e.*, the junction between source/drain extensions 60 and region 130) nor the channel region is formed in the amorphous region 120.

Similarly, the cited amorphous regions 25 in the ‘502 reference are separate from any pn-junction formed by source/drain extension layers 40 and 42 and a channel region. Specifically, the ‘502 reference simply teaches that extension layers 40 and 42 (which form source/drain extensions 20 and 22 shown in Figure 1) are formed in the amorphous regions 25, with the amorphous regions 25 being exclusive of the area under the gate stack 14 (*i.e.*, the amorphous regions 25 are exclusive of the channel region). *See, e.g.*, Figure 2 and Col. 5:30-35. Thus, the ‘502 reference only teaches forming the source/drain extensions 20 and 22 in the amorphous regions 25, while failing to teach forming the channel region in the amorphous regions 25 and also failing to teach forming any pn-junction formed by the channel region and source/drain extensions 20 and 22 in the amorphous regions 25, as claimed.

In view of the above, neither the ‘618 reference nor the ‘502 reference teaches forming a channel region in an amorphized region and forming the pn-junction between the channel region and source/drain extensions in the amorphized region, as claimed. In this context, regardless of whether the amorphizing implants in the cited references are carried out before or after subsequent pn-junction implants, there is no teaching or suggestion of forming the pn-junction in and/or as part of the amorphized region as claimed. Moreover, the purpose of the primary ‘618 reference clearly teaches away from such limitations because the ‘618 reference requires a post-implantation amorphization and relies upon this post-implant amorphization to effect its purpose, as discussed above (*see, e.g.*, the abstract and Col. Col. 4:52-56). *See KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1742 (2007) (“[W]hen the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be non-obvious.”). Thus, the cited combination of references accordingly fails to teach or suggest the claimed amorphizing implantation and related formation of a pn-junction therein. Accordingly, the § 103 rejections of claims 1-20 are improper and Applicant requests that they be withdrawn.

In view of the remarks above, Applicant believes that each of the rejections has been overcome and the application is in condition for allowance. Should there be any remaining issues that could be readily addressed over the telephone, the Examiner is asked to contact the agent overseeing the application file, Peter Zawilski, of NXP Corporation at (408) 474-9063 (or the undersigned).

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